

Pipeline Group Factual Report

ATTACHMENT 33

2006 Annual External Corrosion Control Survey

**Carmichael, Mississippi
DCA 08 MP 001**

Farrel

McDANIEL & ASSOCIATES, LLC

CATHODIC PROTECTION SPECIALISTS

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August 10, 2006

Dixie Pipeline Co.
Attn: Mr. Tony Williams
Suite 301 West
1117 Perimeter Center West
Atlanta, GA 30338

SUBJECT: 2006 Annual Cathodic Protection Survey

Gentlemen,

Recently we completed the 2005 annual cathodic protection inspection and pipe-to-soil potential survey of Dixie's Western Division from Mt. Belvieu, Texas to Demopolis Alabama. Based on the -850mv "On" criteria that Dixie has used for over 40 years, we found the system to be in good operating condition. We only found one reading below the -850mv criteria (see recommendations). We have studied the survey data, historical records, and our field observations to formulate the enclosed recommendations for improvements to the system.

All survey readings are negative, in volts, and taken in reference to a copper-copper sulfate reference cell. Please give me a call if you have any questions. Thank you for this opportunity to serve Dixie Pipeline Co.

Sincerely,

Farrel Mc Daniel Jr.
Cathodic Protection Specialist
NACE Cert. # 3922

FMD/jjm
Enclosures
Copy: Mr. John Sullivan



**DIXIE PIPELINE WESTERN DIVISION
MAIN LINE
2006 ANNUAL SURVEY**

DATE	TEST PT.	LOCATION	P/S ON	C/S ON	COMMENTS
06/06/06	21555+17	Hess Pipeline	-1.575		
06/06/06	21559+07	Hunt Pipeline	-1.803		
06/06/06	21665+36	Hess Pipeline (Hess T/S)	-1.709		
06/07/06	21811+72	Gulf Mobile & Ohio RR	-1.792	-0.521	Hess -1.218
06/07/06	21827+87	Hwy 45	-1.688	-0.634	
06/07/06	21828+33	Chickasawhay Nat. gas	-1.685		
06/07/06	21835+39	Hess Pipeline	-1.687		Hess -0.513
06/07/06	21870+21	Chapperel - Hiawanee Road	-1.607		Chic. Gas -0.905
06/07/06	21964+34	Gulf South Pipeline (DX But)	-1.551		Gulf South -0.910
06/07/06	22014+73	Weeks Exploration	-1.567		Weeks Exp. -0.584
06/07/06	22032+73	Chickasawhay 2" Gas	-1.583		Chic. Gas -1.123
06/07/06	22033+18	Paved Road	-1.589		
06/07/06	22063+83	Fence line off Oilfield Rd.	-1.627		
06/07/06	22254+25	Hwy 510	-2.008	-0.899	East of MM 418
06/07/06	22314+87	Paved Rd., CR 610	-1.905		
06/07/06	22315+06	Gate Valve	-1.755		
06/07/06	22413+03	Co. Road 624-Paved	-2.237		
06/07/06	22467+54	Carmichael Station	-2.322		Sta. Rect. 20.2 V, 13.1 A
06/07/06	22496+61	Hunt Oil 6"	-2.265		Hunt -1.983
06/07/06	22530+98	Paved Road CR 630	-2.334		
06/07/06	22648+02	Paved Road CR 511	-2.178		
06/07/06	22711+43	MP 430, Woods	-2.181		
06/07/06	22811+62	State Line Road	-2.016		
06/07/06	22869+93	Logging Road MM 433	-1.773		
06/07/06	22963+43	Logging Road	-1.541		
06/07/06	23359+43	Hunt Oil 12"	-2.021		Hunt -1.116

**DIXIE PIPELINE WESTERN DIVISION
CATHODIC PROTECTION RECOMMENDATIONS
2006 ANNUAL SURVEY**

Recently we completed the 2006 annual cathodic protection inspection and pipe-to-soil potential survey for Dixie's Western Division. We have evaluated the data collected, studied the historical data, and reviewed our field notes and observations. Overall, we found the system to be in good operating condition. The following are areas that would benefit from further testing, equipment replacement, additional work, or repairs.

1. Weak Potential Areas

Hwy 28 and Marrango Gas Crossing - 25083+87 - The reading at this test site was -.822 on our survey. In 2005 this reading was -1.480. It appears that this was a recent dig site, and the test leads may have been damaged.

Recommendation: Investigate and correct.

Area Between Sulphur Station and Iowa Junction, Moss Bluff Area- Readings in this area are in the -1.00 volt range with the rectifiers "on." This is about what we would like to see for an "instant off" or polarized reading. We do not have any IR drop or depolarized data for this area. This is a very populated area.

Recommendations: Try adjusting area rectifiers to increase the potentials. Do a depolarization study on this area to make sure that all current sources are identified. Then, interrupt area rectifiers and evaluate the "instant off" or polarized potentials at the existing test stations.

Area Between Baker Station and Grangeville Station, Pride Area - Readings are in the -1.00 volt range with rectifiers "on." Again, this is about what we would like to see for "instant off" or polarized readings. We do have depolarization data on this area, as well as interrupted "instant off" readings at the test stations. This data looks OK; however, we experienced a lot of "drift" in the interruption cycle using old technology interrupters when this work was done several years ago. This may greatly influence the accuracy of the test data. We had to interrupt 8 rectifiers and one bond to evaluate this area. New technology interrupters use satellites to keep the timers in synchronization and will maintain the exact cycle for long periods of time. They also can be left in service for days without losing synchronization.

Recommendation: Try to increase potentials in this area by rectifier adjustments. Consider another interrupted survey on the existing test points using satellite interrupters. This area has also been prepared for a close interval interrupted survey, which is another option.

2. Close Interval Interrupted Surveys

Dixie has begun a program of performing close interval interrupted surveys on a segment of pipeline each year. So far, none of this work has been done in the Western Division. Prior to a close interval survey, a depolarization test should be performed to identify all current sources. Unless each current source affecting the subject area is interrupted, the survey data gathered is not valid. It is also wise to conduct an interrupted survey using the existing test points prior to the extensive close interval survey. This helps find problems which may be resolved before the labor intensive close interval survey is performed. Preliminary work has been completed on the pipeline area from the Mississippi River to the Tangiapahoa Station. The Moss Bluff area just north of Lake Charles would also be a good choice to test.

Recommendation: Begin evaluating the Western Division.

3. Rectifiers and Groundbeds

A. Upgrading of Rectifiers and Groundbeds - We have been upgrading the 40+ year old cathodic system over the past several years. In early 2006, before the annual survey, we replaced the groundbeds at Maringouin Station and DP-5 at Cecilia, La. We also replaced rectifiers at Maringouin Station and Carmichael Station. We are attaching updated rectifier and groundbed information to use in establishing the priorities for 2007. Possible candidates for 2007 are:

2007 Rectifier Replacements

DP-2A at Edgerly	1972 rectifier, oper. over amp rating
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2007 Groundbed Replacements

Mt. Herman Station	1972 groundbed, 7.92 ohms
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DP-9 at Strengthford - groundbed resistance has been increasing and the rectifier is at maximum voltage setting

2002 - 3.0 ohms	2003 - 3.6 ohms	2004 - 4.3 ohms
2005 - 5.9 ohms	2006 - 6.4 ohms	

B. Rectifier Adjustments - Rectifier adjustments to maintain the proper amount of current output are necessary to maintain proper levels of protection.

Recommendation: Make rectifier adjustments as necessary to improve levels of protection and current distribution. Spot Check results.

C. Repairs and modifications to Rectifiers and Groundbeds

1. Aerial Signal Lights - The Eastern and Central Division have signal lights that allow weekly monitoring of the rectifiers by the

pipeline pilot. Plans are to install the same on the Western Division.
Recommendation: Proceed with installation.

2. Review rectifier maintenance records to determine if lightning arrestors need to be changed and/or additional protection installed.

4. Bonds

A. Critical Bonds - All critical bonds were performing satisfactorily during the survey.

Recommendation: Continue monitoring critical bonds per DOT requirements.

B. Non Critical Bonds

8900+90 LIG Bond - This bond at our rectifier DP-5 at Rayne, LA is to a section of piping that is no longer in service by LIG. They are not providing any means of protection for the pipeline, and we are giving them 4 amps at this site. If they are not going to protect the pipeline, should we have to provide all the protection?

Recommendation: Work with LIG's corrosion personnel on this issue. Disconnect the bond if possible.

2635+20 DOW Bond at Lawrence St. Rectifier - Dow is bonded to our rectifiers from Mt. Belvieu to Orange, TX. The Lawrence St. Rectifier bond had a current increase of 130% over the 2005 survey.

Recommendation: Work with Dow's corrosion personnel to determine the cause of increase, and if this amount of current is necessary.

14075+70 Transco Bond (Williams) - This bond has been passing current in the opposite direction for the last 2 annual surveys. At one time this was a critical bond for Dixie. We have installed new groundbeds and rectifiers in this area. This bond may be no longer needed at all.

Recommendation: Work with Williams corrosion personnel to insure that all their area rectifiers are running, then conduct tests to see if the bond can be disconnected.

5. Casings

All casing readings were within accepted DOT limits in respect to the pipeline potentials. Several casings indicated influence from the cathodic protection system but were not within 100 mv of the pipeline potentials; therefore, do not require action at this time.

Recommendation: Continue to closely monitor the casings during annual surveys.

6. Test Stations

A. Repairs - A list of test stations in need of repair or replacement is attached.

B. Test Lead Identification and Verification - Perform tests to identify or verify continuity at the following locations:

2092 +54 Sun Oil Crossing @ New Sun Rectifier. Our clamp on amp meter found 65 amps output on the DC conduit for Sun's rectifier. Our test station has leads reading -.880 and -1.580. Sun's nearest test leads read -2.264 and -1.987. Identify the test leads in Dixie's test station and conduct interference tests if necessary.

21424+39 Valve has two test leads. One reads high, the other reads low. Test the low reading lead to insure that we do not have an underground insulating flange.

7. Miscellaneous

A. Update groundbed and rectifier records.

B. Insure that the new construction at Erwinville maintains the isolation of the Dixie main line.

C. Compare information from the internal inspection data to see if there is any correlation between anomalies identified by the internal inspection and weak potential areas, foreign crossings, casing influence, etc.

DIXIE PIPELINE CO. - WESTERN DIVISION
RECTIFIER AND GROUND BED INFORMATION
August 2006

Rectifier	Rect. Size	Output	Groundbed	Age	Resistance	Remarks
DP-1A Mt. Belvieu Sta.	20V, 40A	10.3V, 30.0A	DW	R- 2005 GB-1997	0.34 ohms	New Rectifier 10/05
DP-1C Liberty, TX	20V, 40A	10.6V, 24.5A	DW	R- 2001 GB-2001	0.43 ohms	Dow Bond 6.9 A
DP-1 Devers, TX	20V, 30A	28.0V, 20.2A	Conv.	R- 1998 GB-1998	1.38 ohms	Dow Bond 4.1 A
DP-1B Beaumont	20V, 40A	14.7V, 24.6A	DW	R- 2005 GB-1972	0.59 ohms	New Rectifier 10/05 Dow Bond 5.1A
DP-2 Mauriceville	30V, 30A	28.9V, 21.4A	Conv.	R- 2004 GB-1994	1.35 ohms	Dow Bond 1.3 A
DP-2A Edgerly	20V, 20A	10.9V, 21.7A	Conv.	R- 1972 GB-1972	0.50 ohms	Old Rectifier
DP-2B Sulphur Sta.	20V, 20A	18.4V, 18.1A	Conv.	R- 1988 GB-2001	1.01 ohm	
DP-3 Iowa	40V, 20A	13.0V, 21.4A	Conv.	R- 2003 GB-2005	0.60 ohms	New groundbed 5/05
DP-3A Evangeline Sta.	20V, 20A	13.6V, 16.5A	Conv.	R- 1988 GB-2002	0.82 ohms	
DP-3B Egan Sta.	20V, 20A	9.6V, 10.4A	Conv.	R- 1988 GB-2002	0.92 ohms	
DP-4 Rayne, La.	30V, 20A	22.5V, 17.0A	Conv.	R- 2001 GB-2000	1.32 ohm	Lig Bond 3.8A

DIXIE PIPELINE CO. - WESTERN DIVISION
RECTIFIER AND GROUND BED INFORMATION
August 2006

Rectifier	Rect. Size	Output	Groundbed	Age	Resistance	Remarks
DP-4A Breaux B. Sta.	20V, 20A	9.2V, 15.5A	Conv.	R- 1988 GB-2005	0.59 ohm	New groundbed 5/05
DP-5 Cecilia	30V, 20A	18.3V, 17.6A	Conv.	R- 2003 GB-2006	1.04 ohms	New groundbed 2006
DP-5A Maringouin Sta.	40V, 20A	8.1V, 13.1A	Conv.	R- 2006 GB-2006	0.62 ohms	New rectifier 2006 New groundbed 2006
DP-6 Erwinville, La.	30V, 20A	7.4V, 4.0A	Conv.	R- 2003 GB-2003	1.85 ohms	
DP-6A Baker Sta.	20V, 40A	17.1V, 25.5A	Conv.	R- 1998 GB-1998	0.67 ohm	
DP-6B Grangeville Sta	20V, 20A	18.9V, 16.5A	Conv.	R- 2000 GB-2002	1.14 ohms	
DP-7 Pine Grove	30V, 20A	23.8V, 9.1A	Conv.	R- 1998 GB-1998	2.61 ohms	
DP-7B Tangipahoa Sta.	60V, 20A	32.1V, 17.3A	DW/Conv.	R- 1999 GB-1999	1.85 ohms	
DP-7A Mt. Herman Sta.	100V, 20A	88.7V, 11.2A.	Conv.	R- 2004 GB-1972	7.92 ohms	Old Groundbed
DP-8 Lake Columbia	20V, 30A	17.7V, 19.0A	Conv.	R- 2002 GB-1993	0.93 ohms	
DP-8A Oloh Sta.	60V, 20A	25.6V, 9.6A	DW/Conv.	R- 1999 GB-1999	2.66 ohms	

DIXIE PIPELINE CO. - WESTERN DIVISION **RECTIFIER AND GROUND BED INFORMATION**

August 2006

Rectifier	Rect. Size	Output	Groundbed	Age	Resistance	Remarks
DP-9A Hattiesburg Sta.	50V, 40A	42.5V, 38.9A	Conv.	R- 1998 GB-1972	1.09 ohm	Groundbed has been added on to several times.
DP-9 Strengthford	40V, 20A	39.4V, 6.2A	DW	R- 2002 GB-1987	6.35 ohms	
DP-9C Yellow Creek Sta.	60V, 20A	28.7V, 10.4A	DW/Conv.	R- 1998 GB-1998	2.76 ohms	
DP-9B Carmichael	40V, 20A	20.2V, 13.1A	Conv.	R- 2006 GB-1973	1.54 ohms	New rectifier 2006 Old groundbed
DP-9D Butler	60V, 20A	12.3V, 9.3A	Conv./DW	R- 1998 GB-1998	1.32 ohms	
DP-10 Pennington	30V, 30A	18.3, 10.9A	DW	R- 2002 GB-1987	1.68 ohms	

**DIXIE PIPELINE WESTERN DIVISION
TEST STATION REPAIRS
FROM 2006 ANNUAL SURVEY**

Test Station	Location	Description
8+45	Conoco/Buckeye	Test Station Broke Off
577+54	Enron Pipeline	Test Station Broke
1130+71	Highway 61	Test Station Broke
1714+12	Test Station at End of Woods	Post Rotten
1774+90	Sun Oil Pipeline Crossing	Test Station Torn Down, Wires Ok
6692+43	Highway 165	Test Station Bent Over
8285+44	PR 4-31 & Iota Nat. Gas	Broke Cover
8392+97	PR 6-37	Broke Cover
9264+77	Highway 343	Broke Cover
9347+00	Highway 93	Broke Cover
10786+68	E. Atachafalaya Levee	Test Station Bent Over
14147+17	Dirt Road	Test Station Gone, Could Not Find Wires
14623+76	Highway 10	Broke Cover
15724+63	Highway 38	Broke Cover
15769+97	Archie Simmons Road	Test Station Gone, Could Not Find Wires
15849+15	Paved Road	Broke Cover
15872+91	Holmesville Road	Broke Cover
15941+11	Hwy. 1055 @ Mt. Herman St.	Test Station Torn Down, Wires Ok
16749+92	Sumerall Road	Post Rotted Off
16898+89	Southern Natural Gas	Broke Cover
16967+84	Southern Natural Gas	Test Station Broke
16969+68	Southern Natural Gas	Test Station Broke

17200+76	Mt. Carmel Church Road	Test Lead Bad
18220+81	Clyde Lofton Road	Test Station Torn Down, Wires Ok
18427+26	Old Hwy. 24 MM 349	Broke Cover
18464+53	Old Hwy. 24, Third Crossing	Broke Cover
19111+95	Rawl Springs Road	Test Station Buried, Broke Cover
19183+38	River Road	Broke Cover
21077+29	Dew Mills Road, MP 400	Test Station Torn Down, Wires Ok
21221+93	Newly Paved Road	Test Station Gone, 25' West of MM 402
21554+67	Test Station in Field Near Old Hess Crossing	Test Station Torn Out, DX Wire Ok
23134+77	Transco Pipeline	Test Station Torn Up, Wires Ok